STRATEGY RESEARCH PROJECT

IMPROVING THE ARMY MAINTENANCE DEPOT SYSTEM

BY

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USAWC CLASS OF 2000

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ABSTRACT

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TITLE: Improving the Army Maintenance Depot System

FORMAT: Strategy Research Project

DATE: 1 March 2000 PAGES: 29 CLASSIFICATION: Unclassified

The United States has always had a defense industrial base. The base has expanded and decreased according to the requirements of the nation. One part of the industrial base is the Army depot maintenance system. After the Cold War ended, there was no longer a requirement for as large a defense budget. However, the Army has been forced to keep more depot maintenance infrastructure than it can afford. The current depot maintenance system has challenges to include decreasing workload and unneeded depot capacity. Statute and congressional interest protect it. The Army needs dollars to modernize its' equipment. It has attempted to fund modernization through dollars saved by various management initiatives such as the Revolution in Military Logistics and Acquisition Reform. One major management initiative is competitive sourcing and privatization. This paper examines ways to change the current depot system to make it responsive to the warfighter, and more cost effective in order to free up dollars for modernization.

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IMPROVING THE ARMY MAINTANENCE DEPOT SYSTEM

Our nation has always had a defense industrial base. The initial requirement was in support of a small military force. It began in the 1700s with musket and gunpowder producers. The Civil War was the first mass industrial age war for Americans. After the war was over, the Army disbanded and requirements for an industrial base disappeared. Except for small arms, there was no major U.S. industrial base prior to 1918. During World War I we bought the majority of our weapons from England and France. With the approach of World War II, it became evident that we needed a large industrial base to support the war effort. France was overrun and England was on the verge of bankruptcy. We created the 'Arsenal for Democracy' which won the war and propelled the country out of the depression. After World War II concluded, we downsized the industrial base. A few years later, we needed the base for the Korean War, and then the Cold War. From the 1940s on, we have had a large industrial base ingrained into the law. The end of the Cold War is causing the Department of Defense (DoD) to relook at the surviving huge and expensive infrastructure.

Since the Cold War ended, there is no longer a requirement for as large a defense budget as in the past. However, the post-Cold War military is even busier than before. The Army has had a 300 to 400% increase in operating tempo (OPTEMPO).[1] The Army is deployed in 70 countries[2] performing missions varying from peace enforcement to humanitarian operations.

The Army's challenge has been to keep the force trained and ready, and simultaneously continue the most fundamental institutional change since World War II. Meeting this challenge with constrained resources has stretched the Army to the limit.[3] Since 1989 the Army's force structure has been reduced by 33 percent, its obligated budget authority by 37 percent and its infrastructure by only 21 percent.[4] The Army used modernization and real property maintenance funding as a cash cow in order to preserve force structure and OPTEMPO. The solution to save dollars seemed obvious – identify more bases for realignment/closure in order to use the savings for modernization and other priorities. Despite repeated requests by all the Services, Congress has refused to consider any additional base closures since Base Realignment and Closure (BRAC) 95.[5]

The Army has attempted to fund modernization through dollars saved by various management initiatives such as the Revolution in Military Logistics (RML) and Acquisition Reform. So far, $10 billion has been put back into modernization.[6] The RML calls for "global, distribution-based logistics, total asset visibility, agile infrastructure, rapid force projection and maintenance of an adequate logistics footprint."[7] It is vitally linked with modernization in the form of systems support and total ownership costs.[8] Per the Honorable Paul G. Kaminski, then-Under Secretary of Defense for Acquisition and Technology, logistics in one way or another comprises half the DoD budget. Every logistics dollar spent on maintaining outdated systems, inefficient or excess maintenance capability and unneeded parts inventory is a dollar unavailable to build, modernize or maintain, or operate warfighting capability.[9]

One major management initiative to save logistics dollars is competitive sourcing and privatizing. The government is examining what jobs can be done by the private sector and if it is more cost effective. This can be a time consuming process and must be justified by law through the Commercial Activities or A-76 Program. The Department of Defense is challenged with reviewing and changing the paradigms. How much of an industrial base do we need? How can we afford it? Should we attempt to outsource and/or privatize most or the entire government segment of the industrial base? How do we leverage the existing civilian economy in the areas of computers, machinery, information-based technology and other things that never existed before? How can we get more efficient within the legislative constraints and congressional interest in the potential loss of constituents' government jobs? What will be the future impact on the warfighter?

DEFENSE TECHNOLOGY AND INDUSTRIAL BASE

The defense technology and industrial base is the people, institutions, technological expertise, and production capacity used to develop, manufacture and sustain the weapons and supporting defense equipment needed to achieve our national security objectives. It contains three functional elements:

1. a *technology base* composed of private industry laboratories and research facilities, university laboratories conducting defense research, government laboratories, and test centers;
2. a *production base* with private industry and government owned government-operated (GOGO), government-owned contractor-operated (GOCO) facilities, and contractor-owned and contractor-operated facilities (COCO); and
3. A *maintenance base* with government facilities and private companies that maintain and repair equipment either at their own facilities or in the field.[10]

A February 1991 Office of Technology Assessment Report proposed measuring the defense technology and industrial base against two criteria. The first criterion is the base's ability to develop, produce, deploy, maintain, and upgrade modern weapon systems and supporting equipment in peacetime. The second criterion is that the base must also be able to respond quickly to crisis or war with increased production of current materiel and/or the fast development of new systems, often referred to as 'surge capability.'[11]

THE RECENT U.S. INDUSTRIAL BASE

The current U.S. defense technology emerged during the cold war and was designed to support a military structured to deal with a large Soviet threat. The industrial base was focused toward development and production of high-technology weapons designed to defeat large numbers of sophisticated Soviet equipment and to be able to support major sustained conventional operations against the Soviet Union. Except for a period in the early to mid-1950s, the need for conventional sustainability and associated industrial responsiveness capability was seldom fully funded. The base might be described as one that provided a deterrence-oriented, high technology force with little sustained logistics depth.[12]

Beginning in the late 1970s, studies of the defense technology and industrial base revealed a number of concerns. These studies noted flawed acquisition policies that prevented efficient defense production, suppressed innovation, and interfered with good business practices. Another concern was the lack of industrial responsiveness. Studies found that subtier producers had limited capacity, there were long lead-times even in peacetime, parts of the industrial plant were obsolete, and inefficiencies delayed industrial responsiveness.

In the 1990s, the defense industry was strongly encouraged to reduce costs due to the declining DoD budget. Many responded by eliminating excess plant capacity or selling parts of their defense business. Others merged or bought other defense contractors. Then-Secretary of Defense William Perry envisioned a future industrial base with a few primes operating at near capacity rather than many primes operating inefficiently at reduced capacity. In order to encourage this, in July 1993 he allowed contractors to obtain restructuring cost reimbursement if it was in the best interest of the government.

MAINTENANCE BASE - DEPOTS

Army maintenance depots were established between 1941 and 1961 to support overhaul, repair, and refurbishment of most Army ground and air combat systems. Prior to 1941, some maintenance and repair work was done by the supply arsenals and depots, as well as by contractors. The current depot workload includes end items such as tanks, radios, and helicopters, as well as reparable secondary items. Several depots perform limited manufacturing in support of depot overhaul and repair programs.[13] Army depot maintenance is normally performed in government owned and operated facilities under Army Materiel Command (AMC) or by contractors in their own facilities.

From 1976 until present, the number of industrial maintenance depots decreased from ten to five. The five remaining depots are Anniston Army Depot (ANAD), Alabama; Corpus Christi Army Depot (CCAD), Texas; Letterkenny Army Depot (LEAD), Pennsylvania; Red River Army Depot (RRAD), Texas; and Tobyhanna Army Depot (TYAD), Pennsylvania.[14] Although the Army recommended that only three depots be retained, the BRAC-95 Commission recommended realignment of two depots (LEAD and RRAD) in addition to retention of three others.[15]

Each of the depots has a specific mission. Anniston Army Depot performs maintenance on heavy tracked combat vehicles and components to include the M1 Abrams tank, M60 tank, M728, M88 recovery vehicle, AVLB, M551 and M113 Families of Vehicles.[16] Corpus Christi Army Depot repairs and overhauls rotary wing aircraft.[17] Letterkenny Army Depot repairs HAWK, Paladin, Hellfire, Avenger, and Sparrow, as well as Paladin (a heavy tracked vehicle). Letterkenny also performs depot maintenance for TOW Bradley, TOW2, TOW Cobra, Dragon, MLRS, ATACMS, ATAS, Sidewinder, Maverick, Shillelagh and AMRAAM.[18] The BRAC-95 Commission recommended that LEAD's artillery maintenance mission be transferred to ANAD and a portion of LEAD's tactical missile workload realigned to TYAD. Red River Army Depot rebuilds/reconfigures the non-heavy vehicles such as the Bradley Fighting Vehicle, MLRS, and roadwheel track. It recertifies HAWK and PATRIOT as well as stores/maintains/demilitarizes

ammunition and missiles.[19] Red River's 113 Family of Vehicles and M9 ACE missions will be transferred to Anniston. Tobyhanna Army Depot supports communications-electronics equipment of all sizes.[20]

LEGISLATIVE REQUIREMENTS

Maintenance depot operations are impacted by legislative requirements. Section 2464 of Title 10 requires the government to own and operate a core capability. The Department of Defense is required to maintain logistic capability sufficient to ensure the technical competence and resources necessary for response to a national emergency. Section 2466, also known as the 50/50 Rule, requires that government depots receive at least 50% of the funds available for depot maintenance. The old rule was 60/40 – at least 60% of the funds went to the public depots. Setting an arbitrary percentage limits the Army's ability to manage depots in a business-like manner. Section 2469 states that government depots must have the chance to compete for depot-level maintenance and repair work valued at $3 million if it is being considered for award to the private sector.[21]

An additional challenge is the political power of the Depot Caucus. This bipartisan group of 77 House members exercises enormous clout over their colleagues on Capitol Hill. Letterkenny Army Depot stays open because members of Congress have the political muscle to protect it and other depots.[22] Since DoD installations are often the largest employer in their respective regions, there is often strong resistance to competitive sourcing, which can result in a loss of government jobs for their constituents.

CORE CAPABILITIES

The depot maintenance policy focuses on maintaining core capabilities – personnel, skills and plant equipment. The FY98 amendment to 2464 defines core capability as "those capabilities that are necessary to maintain and repair the weapon systems and other military equipment ... to enable the Armed Forces to fulfill the strategic and contingency plans prepared by the Chairman of the Joint Chiefs of Staff..." Then-Secretary of Defense William Perry believed that the Pentagon must "retain a limited organic core depot maintenance capability to meet essential wartime surge demands, promote competition, and sustain institutional expertise." [23] Per then-LTG Coburn, Deputy Chief of Staff for Logistics, the Army's core capabilities include requirements for the M1 Abrams tank, Bradley Fighting Vehicle system, electronics components and helicopters.[24]

The Congressional Budget Office (CBO) and the General Accounting Office (GAO) have commented on the term "core." The CBO has criticized DoD for their broad definition of core. Each of the services interprets "core" differently. The CBO said the term has no meaning when used as a tool by the Office of the Secretary of Defense (OSD) or Congress. The Congressional Budget Office claimed the services increased the number of what was considered core workload in order to please senior political leaders and increase workload for the depots.[25] In a March 1998 report, GAO criticized DoD for inconsistent core capability considerations. They said that when something was considered core, it was

not always handled in-house. Some program offices received mixed messages from logistics personnel on whether or not a system was core.[26]

WORKLOADING

The good news is that the Army now has an automated system to link its workload, manpower requirements, and funding. This should improve depot productivity since management will be able to efficiently utilize personnel when workloads change. Instead of being idle when their job gets delayed or cancelled, personnel can now be used where needed.[27]

The Army maintenance depots have a goal to operate at 80% of total capacity. They are funded to maintain unutilized capacity for mobilization purposes. This is different from underutilized capacity, which occurs when the workload is less than full capacity of an operating facility and not considered a mobilization requirement. The capacity utilization indexes for the years 00-02 have increased for ANAD (60 to 65%) and RRAD (45 to 65%). The utilization index drops for TYAD (84 to 81%), and LEAD (65 to 52%), while CCAD remains steady at 70%.[28] In order to compensate the depots for the assets held in case of surge, depots receive operations and maintenance funds known as UPC, or Unutilized Plant Capacity. In 1996 the depots received a total of $73.8 million. In 1997 and 1998 they received about $24 million. Army officials told GAO that the money was reduced to fund other priority programs and it would be increased in future years.[29]

The amount of work assigned and personnel to perform the work have declined significantly. Since 1989, there has been a 48% depot workforce reduction – from 21,500 to 11,200 for all five depots. There has been increased emphasis on the commercial market to get quality products at fair and reasonable prices. However, most of the 91% of depot contracts are awarded sole source because the contractor still owns the data rights.[30] The depots also face competition from within the Army.

Forces Command (FORSCOM), Training and Doctrine Command (TRADOC), and the National Guard (NG) compete for depot work. There are a number of regional repair facilities at active Army installations funded with operations and maintenance funds. These include facilities at Fort Campbell, Kentucky; Fort Hood, Texas; Fort Gordon, Georgia; Ft Huachuca, Arizona; Fort Sill, Oklahoma; Fort Bliss, Texas; Fort Rucker, Alabama; and Fort Knox, Kentucky. The Army NG also operates regional repair sites known as integrated sustainment maintenance (ISM) facilities. Current Army policy allows some maintenance activities to perform depot-level maintenance after determination that the sites have adequate facilities, equipment and trained personnel.[31] These requests are normally approved, without considering the effect on the depot system or the Army.[32] The GAO noted that the Army performed $51 million in depot-level tasks at ISMs and repair sites.[33] In response to GAO findings, the Army Materiel Command (AMC) announced a new maintenance system program called the National Maintenance Program. In addition to distributing the workload based on capability and best value, the process will identify redundancies in capability and excess capacity. The end result will be to right size the maintenance capacity to match the requirement.[34]

ARMY WORKING CAPITAL FUNDS (AWCF)

The depots operate under a reimbursable revolving fund concept. Congress established working capital funds to provide a flexible funding mechanism that would allow the depots to operate in a business-like manner, allowing flexibility for expanding and shrinking workloads.[35] The services reimburse the fund with revenues earned by the depots for finished work based on hourly rates designed to cover material, labor and overhead expenses. The depots are supposed to break-even at the end of the fiscal year.[36]

It is very difficult to predict workload and therefore can be a challenge to break-even. About 18 months prior to each fiscal year, hourly rates are set. If the actual costs and workload differ from the anticipated requirement, then the depot can end up in better or worse financial condition. Future customers pay the penalty for a poor year because they are assessed increased rates. Likewise, a profitable year can result in reduced rates.[37] The Army is required to maintain capacity that is not economic from a business perspective, such as for mobilization purposes.

According to a 1997 GAO Report on "Defense Depot Maintenance: Challenges Facing DoD in Managing Working Capital Funds," the working capital funds had not accomplished the goal of operating on a break-even basis. In fact, DoD estimated a $1.7 billion operating loss in FY97. The GAO remarked that excess capacity in the depot maintenance system is a major contributor to the inefficient and expensive maintenance program and is generating significant losses in the working capital fund. In a September 1999 GAO report on the Navy's Pearl Harbor Pilot Project, it was noted that the Navy was becoming increasingly dissatisfied with their working capital fund system, which mirrors the Army's. The customer is more likely to pay a larger share of the cost of ship maintenance than it would if mission funding had been used.[38] The depot charges its customer overhead costs through the working capital fund, while organizations funded with mission funding, also known as operations and maintenance, usually do not pass on overhead costs.

Despite criticism from the services, the Department of the Army Working Capital Fund was awarded the Hammer Award on 7 December 1998 from Vice President Gore. The Hammer Award symbolizes the Administration's efforts to change a government to work better and cost less under the auspices of the National Performance Review (NPR) and 1993 Government Performance and Results Act (GPRA). The Army was recognized for reducing the cost of operations by 31.4 percent ($4.3 billion) in its supply, maintenance and arsenal programs from Fiscal Year 1993 through Fiscal Year 1997. The Army reduced personnel, closed unnecessary facilities, consolidated functions, and adopted more efficient practices."[39]

OPTIONS AND DESCRIPTIONS OF OPTIONS ANALYZED

Here we will discuss who should perform depot maintenance and where. Option 1 will discuss improving the current system. Option 2 will discuss competitive outsourcing the depot system under

Commercial Activities, or A-76. Option 3 discusses privatization-in-place. The final option will discuss strategic sourcing, which improves the current depot system and utilizes private industry.

OPTION 1. IMPROVE THE CURRENT SYSTEM

There are ways to improve the current system. The Navy faced the same fluctuating workload problems as the Army. They came up with a solution to workload forecasting problems. The Navy leadership implemented a guaranteed workload program to stabilize work to naval shipyards. As a result, the activities have had three years of positive operating results instead of losses from the five previous years.[40]

The Secretary of Defense was required under Section 2474 to establish a policy to encourage each service to reengineer industrial process and adopt best-business practices. The selected depots are empowered to enter into public-private cooperative arrangements for the performance of depot-level maintenance and repair. Although the depot partnering is a great initiative, if the contractor is awarded the work this does not always mean that he is performing the work at the depot. Anniston's M1/M2A2 tank upgrade program is a joint venture with General Dynamics Land Systems Division. Although it is their largest shared work program, it has no impact on their excess capacity.[41] However, other programs such as Fox vehicle maintenance, Fox vehicle upgrade, Gunner's Primary Sight, M113 Test Track, Engine Recuperator, as well as the M113 Family of Vehicles (FOV) overhaul and conversion, have resulted in the increased use of the depot facility.

Until recently, all the depots were part of the Industrial Operations Command (IOC). They now are part of their customer's organization. Tobyhanna is part of the Communications-Electronics Command (CECOM). Anniston and RRAD are under Tank-automotive and Armaments Command, while CCAD and LEAD are under Aviation and Missile Command. This is a step in the right direction since their customers are now responsible for workloading them.

Under this option, the Army would establish a guaranteed workload program and also continue depot partnering. The Army is allowing the decreasing depot maintenance workload to be siphoned off by TRADOC, FORSCOM and the NG. The Army needs to workload the depots first. Like the current system, some depot work would be available for private industry, but the depots would be workloaded at least 80% capacity. One advantage is we would meet the congressional mandates since the Army would still use depots for readiness. Guaranteed workloading would make the depots more efficient, resulting in lower costs to the customer. It would also allow depot workers' skills to be kept up-to-date and capacity to be available in case it is needed. There would be very little readiness risk under this option.

Some of the disadvantages include the cost of keeping the depot infrastructure, the workers, and the headquarters staff. Keeping excess capacity costs money. Also, taking the work from the non-depot facilities will usually increase transportation time and cost to the customer.

OPTION 2. COMPETITIVE OUTSOURCING OF ALL DEPOT MAINTENANCE

The Office of Management and Budget Circular A-76, "Performance of Commercial Activities," states that the Federal Government will not start or carry on any commercial activity to obtain a product or service if it can be procured from private enterprise through ordinary business channels.[42] Under competitive sourcing, contractors perform the work previously done by a government employee while the government is still responsible for the functions.

Under the DoD Commercial Activities Program, activities are either inherently governmental or commercial. Inherently governmental activities are so closely related to the exercise of public interest that DoD civilian employees must perform them. Some examples are commanders, resource managers and supervisors of DoD personnel. All other positions are considered "commercial" and subject to competition under the Commercial Activities Program. Core positions can be inherently governmental or commercial. Headquarters can request exceptions to the requirement to compete some commercial areas as core capabilities.[43] As mentioned previously, depot maintenance positions are protected by statue.

The Department of Defense currently outsources approximately 25 percent of base commercial activities, 28 percent of depot maintenance, 10 percent of finance and accounting, 70 percent of Army aviation training, 45 percent of surplus property disposal and 33 percent of parts distribution, as well as substantial portions of other functions. The Army competed 25,305 positions in 468 separate competitions prior to September 1998. The estimated cumulative savings from FY79-96 are over $4 billion. In the FY00-05 Program Objective Memorandum (POM), the Army included $2.8 million in anticipated savings from A-76 competition. They plan to study 73,000 positions. Most of these positions are in social services, intermediate maintenance and repair, real property maintenance, multi-function base support, and data processing. On average, the competition reduces annual operating costs by 31 percent. Government activities win the competition 50% of the time.[44]

Current DoD Initiatives

The Defense Logistic Agency (DLA) Medical Prime Vendor Program has proven to be a success. Suppliers deliver products directly to DoD customers rather than to a DoD warehouse for storage and subsequent distribution. It is a primary distribution channel for procurement and delivery of a full range of commercial brand-specific pharmaceutical and medical/surgical items. Since 1992, DLA has saved $380 million in its inventory costs. The order ship time was reduced from 45 to 2 days, with a 95% fill rate in less than 24 hours. Warehouses were closed and supply personnel redirected.[45]

Army Materiel Command (AMC) awarded a $500 million contract for development and oversight of its logistics information system to private industry. Normally, federal employees and private industry would compete for the work. The Army waived the normal procedure so that only industry competed. The Army position was that the contract would cover new, commercial off-the-shelf software not developed at the Army Logistics Support Center. Contractors and officials monitored the contract process since this was the largest waiver of a public-private competition. The Army offered guaranteed

jobs and salaries for one year to employees whose jobs are eliminated. Of course, not everyone was happy. The local President of the National Federation of Federal Employees considered a federal court injunction to halt it.[46]

The Army selected the Apache AH-64 as a pilot program to implement its strategy to use the commercial sector more for its weapons systems logistics support. The Army and Team Apache Systems (TAS) have been working on a competitive sourcing plan for the Apache helicopter for the last few years. It was estimated that the Prime Vendor Support agreement would save the Army nearly $2 billion over 20 years. The Office of the Secretary of Defense refused to agree to the plan because of Apache spare parts ownership issues. The original agreement was for TAS to manage the Apache parts outside the Working Capital Fund. The Army agreed to retain parts ownership but OSD wants TAS to purchase the inventory. There is disagreement over how much the inventory is worth.[47] The issue is still ongoing.

Allies

The Canadian military is turning over the operation of its supply and logistics system, as well as maintenance for its new search-and-rescue helicopters to private industry. It also hopes to turn over operation of its ammunition and fuel supply systems as part of the same program. The program is called Alternate Service Delivery (ASD). The Canadian Forces hope to save about 90 million Canadian dollars annually, in order to fund new equipment purchases. There is opposition to the plan from the Department of National Defence Employees union and some political sensitivity to the process..[48]

Australia is allowing private and in-house competition for a 10-year Defence Integrated Distribution System (DIDS) contract worth an estimated 1.5 billion Australian dollars. The contract will be for warehousing and distribution of defense supplies across Australia and overseas. The maintenance of Support Command Australia equipment will also be included. The Department of Defence wants to increase the quality of service while reducing costs. This contract is important since Australia now leads the operation in East Timor and must rely on its own logistic system.[49]

Industry

Per the Outsourcing Institute, industry is outsourcing more of its operations. For example, a 1994 study conducted by Pitney-Bowes Management Services found that 77 percent of 100 *Fortune 500* firms surveyed outsourced some aspect of their business support services. The experiences of individual companies further illustrate the prevalence of outsourcing. Canon guarantees photocopier replacement within 24 hours, but outsources the delivery of this service. Avis operates one of the largest data processing systems in the world to handle rental car reservations, but outsources the data processing of its payroll. Chrysler manufactures engines, transmissions and exterior body skins internally, but outsources the remaining 70 percent of final product content.[50]

Advantages and Disadvantages of Outsourcing

Under this option, all depot maintenance would be performed by private industry. Like the AMC initiative mentioned previously, this would require a waiver so that government personnel cannot compete for the depot jobs. Private industry is already performing functions traditionally done by DoD personnel. Some of our Allies are looking at outsourcing their logistics as a means to save money.

One advantage of outsourcing is reduced costs through competition (assuming there is more than one company capable of performing depot maintenance). There is also more personnel flexibility since there are no longer the cumbersome DoD civilian rules to contend with – contractors can control their personnel costs by hiring and firing the personnel they do or do not need. It would reduce the need for a large staff to provide oversight to the depot organization. Outsourcing would allow the Army to focus on its core business of warfighting. Another advantage of outsourcing is that allows maintenance of an industrial base. Since there are no big weapons systems in production, many companies are hungry for maintenance dollars. Since the Army would be able to take advantage of the latest technology, this is not a risk.

There are readiness risks under this option, especially if the contractor is sole source. In some cases, we put ourselves in the situation by not purchasing the technical data. The fewer the sources there are for the system/item, the greater the risk that we will not be able to get what we need, when we need it. Even when there is competition, there is danger of a company "buying in" by bidding low initially and then raising their prices later. We could have a problem repairing some of our obsolete equipment because many companies do not stock obsolete components and repair old equipment. The potential always exists for a company to stop production of an item if it does not get enough demand from the government. The potential commercial sources must have the right types of facilities, equipment and skills, as well as access to technical data. The surge requirement for the item must be considered – by placing all the requirements in the commercial market, will the market be able to surge when required?

OPTION 3. PRIVATIZATION-IN-PLACE (PIP)

Privatization-in-place differs from competitive outsourcing since the government assets are sold or transferred to a contractor. The contractor then performs depot-level maintenance in the depot facilities, normally with former DoD employees. There has been interest in this solution as a way to save jobs in the local communities. After the last round of BRAC, the Clinton Administration made a controversial decision that two Air Force depots should be privatized-in-place instead of closed.

The Army told Congress in a 1996 report "Depot-Level Maintenance and Repair Workload" that it would privatize workloads assigned to the two realigned depots – Red River and Letterkenny. This included either privatizing-in-place or at existing contractor facilities. The GAO felt that privatization-in-place was not cost effective because of the excess capacity in the other depots. They pointed out that it was more cost effective to send the work to the other depots. The GAO also noted that the 20 percent privatization savings assumed by the Army does not apply to depot maintenance because of limited or no

competition and the existence of excess public depot capacity that increased the cost of performing depot maintenance work in remaining depot facilities.[51]

The GAO has still not changed its mind about privatization-in-place. In a May 97 report, GAO said the Navy's privatization-in-place of their Louisville Depot was less cost effective than distributing the workload to the other Navy depots. The GAO found that the Navy overstated the one time transfer cost to the other facilities and the resulting annual savings.[52] In a December 1999 report, GAO noted that privatization-in-place had not optimized reductions in excess capacity and operating costs.[53] However, there is some good news. Some contractors have reengineered their business processes and reduced infrastructure in response to a declining workload. United Defense Partnership Limited, the contractor at the Louisville Depot, has reduced the workforce by two-thirds and facility infrastructure by 40%.

Privatization-in-place offers a few advantages that include the flexibility of a contractor workforce vis-a-vis government workforce with all its inflexibility. Theoretically, personnel costs should be reduced under privatization since contractors do not need to keep workers when there is no longer a need for them. However, a contractor can not just lay off people temporarily without risk - depot maintenance personnel are highly skilled personnel and are hard to replace if needed again. Also, privatization-in-place also keeps jobs in the local community. There is little readiness risk with this option.

Privatization-in-place would probably not save money on infrastructure costs or through competition. There is a criticism that the government still indirectly pays for the cost of the excess infrastructure since it is an overhead cost to the contractor. There would probably be fewer competitors for depot maintenance since it requires more capital investment.

OPTION 4: STRATEGIC SOURCING

On 5 November 1999, DoD issued draft guidance on its Strategic Sourcing Program. The strategic sourcing approach's goal is to determine whether a process can be improved, eliminated, or streamlined. It allows the Services to take a comprehensive look at their organizations and consider all options, to include A-76 competition. The Services can consolidate functions or activities, reengineer and restructure, adopt best business practices, eliminate obsolete practices, and privatize.[54] In a 26 July 1999 article, Randall Yim, Deputy Under Secretary of Defense (Installations) said the change could alter current plans to open 230,000 jobs for competition by 2005. Yim stated that the Navy believes that about 40% of its 64,000 commercial jobs now targeted for study could be reorganized or eliminated in-house without competition. There are opposing viewpoints on whether this will work. It will save the cost of an A-76 study, which can be as much as $9,000 for every position studied. However, Paul Taibl, a policy analyst for Business Executives for National Security, said it would be challenging for DoD to achieve savings without competition, since the business community will have a lesser playing field.[55]

The U.S. Naval Surface Warfare Center (NSWC), Crane, Indiana, is testing the Strategic Sourcing approach. CAPT Scott Wetter, the center commander, stated that he wanted to look at the whole organization during the next three years, rather than just segments of the organization under A-76. The

savings will be the same as traditional job competition - $100 million. After the review, the jobs will be downsized, competed, or re-engineered. Jobs to be competed would go under the A-76 rules. So far, NSWC has eliminated redundant materiel management operations and has reorganized its public works department. The key to success is an effective labor-management partnership.[56]

The Army needs to take all five depots and use the concept of strategic sourcing. They should not be looked at individually – all need to be analyzed as a group. The right solution might be to just keep two or three depots, workload them to maximum capacity, while retaining their mobilization capacity requirement. All of the depot workload should be automatically workloaded in the depots – TRADOC, FORSCOM and NG should only be allowed to perform depot maintenance by exception.

Strategic sourcing has the advantage of allowing the organization to examine itself for efficiencies. It offers the advantage of keeping some government work in-house at the most efficient level as well as using the advantages of competition for the rest of the work. This way the government can retain needed functions such as depot maintenance of obsolete equipment that industry will not do and decide the best way to do the rest. It reduces risk to the warfighter and helps to keep our industrial base healthy. Keeping the depots workloaded also keeps the overhead costs down, decreasing customer costs. There would be a moderate readiness depending on how much maintenance was being performed by contractors.

Unless the team working on the new organization is unbiased, there is potential for people to look out for their jobs, rather than creating the best organizational structure. Since this method will probably decrease government jobs, there will have to be cooperation from the unions and the Depot Caucus.

CONCLUSION

Should we outsource or privatize the Army maintenance depots? The more important question is - how do we make logistics more efficient so we can support the warfighter with acceptable risk and also generate savings for modernization? Some solutions proposed have been improving the current system, competitive sourcing the entire system, privatization-in-place, and strategic sourcing.

The depots are being treated like a business, but are not being provided the resources to act like one. A major reason that the depots are underutilized is because AMC is allowing active Army and NG units to perform work that rightfully belongs in one of the five depots. Although it may save transportation time, and repair costs for the individual customer, it is crippling our depot system. An underutilized depot must pass all costs to its customers. Those customers not required to use a depot may look elsewhere for less expensive support. This could result in a further decline in depot workload. The Army needs to establish a guaranteed workload program.

Competitive sourcing all depot maintenance has a key obstacle - the legislative requirement to have a government core logistics capability. The Depot Caucus is extremely powerful and micromanages the depots. There is also a huge readiness risk allowing industry to perform all depot maintenance since a contractor could decide that he does not want to provide a service and there may not be anyone else capable or willing.

Under privatization-in-place, the contractor personnel work in the government facility. Although it sounds like a good solution to keep most of the government workforce employed by private industry, it has not proved to be an effective solution so far. It is often more efficient to relocate workload to another location rather than privatize-in-place. This would also require repeal of the statute.

Strategic sourcing allows the services to take a comprehensive look at their organizations and consolidate functions/activities, reengineer and restructure, adopt best business practices, and outsource or privatize. The Army needs to study all organizations that perform depot maintenance and decide what is the best depot maintenance structure. The new organizations should then be reengineered/restructured to eliminate depot maintenance functions that are no longer necessary or can be performed by another divisions within the same organization. Those functions that are commercial in nature could be competed under A-76 or privatized. This would have the advantage of allowing the Army to examine depot maintenance from a holistic, rather than a piecemeal approach. This differs than most A-76 studies, where only smaller groups are studied. The Army could consider adequately workloading each open facility. Congress's support would be key – they have to support another round of BRAC(s) in order to close any depot maintenance facilities.

RECOMMENDATION

The Army currently lacks a single cohesive policy on depot, arsenals, and ammunition plants, according to a June 1999 PricewaterhouseCoopers Report. One position is to eliminate all the depots, arsenals, and ammunition plants and contract out all requirements to private industry. The other Army position is to make the depots as efficient and economical as possible through workloading.[57]

Strategic sourcing is the answer. This solution saves dollars to be used for modernization, with an acceptable risk to the warfighter. As mentioned previously, it will allow the Army to take a strategic look at the depots, consolidate functions/activities, reengineer and outsource or privatize as appropriate. It allows the Army to benefit from a smaller, more efficient government organization while also getting what it needs from the private sector. Army needs to examine its depot maintenance system from a strategic perspective. Performing the work in-house if adequate private industry capability does not exist can reduce any readiness risk. The dollar savings would come from a smaller, fully workloaded depot operation. However, the support of Congressional members is key.

Word count: 6323

GLOSSARY

ACE – Armored Combat Earthmover

AFGE – American Federation of Government Workers

AMC – Army Materiel Command

ANAD – Anniston Army Depot

AMRAAM – Advanced Medium-Range Air-to-Air Missile

ASD – Alternative Service Delivery

ATAS – Advanced Tank Armament System

AWCF – Army Working Capital Funds

ATACMS – Army Tactical Cruise Missile Air-to-Air Stinger

AVLB – Armor Vehicle Launched Bridge

BRAC – Base Realignment and Closure

CBO – Congressional Budget Office

CCAD – Corpus Christi Army Depot

CECOM – Communications-Electronics Command

CIO – Chief Information Officer

COCO – Contractor-owned and Contractor-operated

DIDS – Defence integrated Distribution System

DLA – Defense Logistics Agency

DoD – Department of Defense

DRID – Defense Reform Initiative Directive

DSB – Defense Science Board

FOV – Family of Vehicles

FORSCOM – Forces Command

GAO – General Accounting Office

GOCO – Government-owned and Contractor-operated

GOGO – Government-owned and Government-operated

GPRA – Government Performance and Results Act

HAWK – Homing All the Way Killer

IOC – Industrial Operations Command

ISM – Integrated Sustainment Maintenance

IT – Information Technology

LEAD – Letterkenny Army Depot

LOGCAP – Logistics Civil Augmentation Program

MEO – Most Efficient Organization

MLRS – Multiple-Launched Rocket System

NG – National Guard

NPR – National Performance Review

NSWC – Naval Surface Warfare Center

OPTEMPO – Operating Tempo

OSD – Office of the Secretary of Defense

PATRIOT – Phased Array Tracking Radar Intercept on Target

PIP – Privatization-in-Place

POM – Program Objective Memorandum

RML – Revolution in Military Logistics

RRAD – Red River Army Depot

TAS – Team Apache Systems

TOW – Tube-launched Optically-tracked Wire-guided missile

TYAD – Tobyhanna Army Depot

TRADOC – Training and Doctrine Command

UPC – Unutilized Plant Capacity

ENDNOTES

[1] Association of the United States Army, Institute of Land Warfare, The Army Report: Procurement Holiday, (Arlington, VA; Institute of Land Warfare, August 1999), 2.

[2] Louis Caldera and General Dennis J. Reimer, "A Statement on the Posture of The United States Army Fiscal Year 2000," presented to the Committees and Subcommittees of the United States Senate and the House of Representatives (Washington DC: Office of the Chief of Staff of the Army, 1999), ix.

[3] Caldera & Riemer, Ibid., vii.

[4] Association of the United States Army, Institute of Land Warfare, Ibid.

[5] "Competitive Sourcing Strategic Plan for the U.S. Army," linked from ACSIM Homepage, available from http://www.hdqa.army.mil/acsimweb/ca/stpln2.htm; Internet; accessed 4 November 1999.

[6] Association of the United States Army, Institute of Land Warfare, Ibid., 6.

[7] Paul J. Hoeper and LTG Paul J. Kern, Development, Acquisition and Fielding Strategy 1999, (Washington D.C.: U.S. Department of the Army), 2.

[8] Assistant Secretary of the Army (Acquisition, Logistics and Technology), ASA (ALT) Paul J. Hoeper, and Military Deputy to the ASA (ALT), LTG Paul J. Kern, "Development, Acquisition and Fielding Strategy 1999."

[9] Paul G. Kaminiski, "The Revolution in Defense Logistics", linked from Defenselink at "Speeches," available from http://www.defenselink.mil/speeches/1995/s19951031-kaminski.html; Internet; accessed 24 October 1999.

[10] Congress, Office of Technology Assessment, Adjusting to a New Environment: The Defense Technology and Industrial Base Challenge (Washington D.C: U.S. Government Printing Office, 1991), 2.

[11] Ibid., 4.

[12] Congress, Office of Technology Assessment, Ibid., 11.

[13] General Accounting Office, U.S. Industrial Facilities – Workforce Requirements and Related Issues Affecting Depots and Arsenals (Washington D.C.: U.S. Government Accounting Office, November 1998), 7.

[14] Ibid., 3.

[15] Ibid., 3.

[16] "Anniston Army Mission (ANAD)," 17 August 1998; available from http://www.ioc.army.mil/rm/iocfact/anad2.htm; Internet; accessed 1 November 1999.

[17] "Corpus Christi Army Depot (CCAD)," 17 August 1998; available from http://www.oic.army.mil/rm/iocfact/ccad2.htm; Internet; accessed 1 November 1999.

[18] "Letterkenny Army Depot (LEAD)," 17 August 1998; available from http://www.ioc.amry.mil/rm/iocfact/lead2.htm; Internet; accessed 9 December 1999.

[19] "Red River Army Depot (RRAD)," 18 August 1998; available from http://www.ioc.army.mil/rm/iocfact/rrad2.htm; Internet; accessed 9 December 1999.

[20] "Tobyhanna Army Depot," available from http://www.tobyhanna.army.mil/; Internet; accessed 9 December 1999.

[21] General Accounting Office, Army Industrial Facilities – Workforce Requirements and Related Issues Affecting Depots and Arsenals, Ibid., 8.

[22] Associated Press "Army Depots Remain Open But Underused," linked from Early Bird, available from Http://ebird.dtic.mil/Aug1999/e19990818depots.htm; Internet; accessed 18 August 1999.

[23] Sandra I. Meadows. "Push to Privatize Pentagon Work Gathers Wide Support." National Defense (October 1995): 11-12.

[24] LTG John Coburn, "DoD News Briefing," 4 April 1996; available from http://www.defenselink.mil/news/Apr1996/t040596_t040out.html; Internet; accessed 24 October 1999.

[25] Meadows, Ibid., 12.

[26] General Accounting Office, Defense Depot Maintenance: DoD Shifting More Workload for New Weapon Systems to the Private Sector (Washington D.C.: U.S. General Accounting Office), 11-12.

[27] General Accounting Office, Army Industrial Facilities – Workforce Requirements and Related Issues Affecting Depots and Arsenals, Ibid. 27-28.

[28] "Defense Depot Maintenance Council, Business Plan Fiscal Years 1998-2003," available from http://www.jdmag.wpafb.af.mil/dbp3-3.htm; Internet; accessed 25 October 1999.

[29] General Accounting Office, Army Industrial Facilities – Workforce Requirements and Related Issues Affecting Depots and Arsenals, Ibid., 10.

[30] General Accounting Office, Defense Depot Maintenance: Contracting Approaches Should Address Workload Characteristics (Washington D.C: U.S. General Accounting Office, 15 May 1998), 1.

[31] Ibid., 7.

[32] General Accounting Office, U.S. Industrial Facilities – Workforce Requirements and Related Issues Affecting Depots and Arsenals, Ibid., 35.

[33] General Accounting Office, Defense Depot Maintenance: Public and Private Sector Workload Distribution Reporting Can Be Further Improved (Washington D.C.: U.S. General Accounting Office), 11.

[34] General Accounting Office, Defense Depot Maintenance: Contracting Approaches Should Address Workload Characteristics, Ibid., 11.

[35] General Accounting Office, Depot Maintenance: Status of the Navy's Pearl Harbor Pilot Project (Washington D.C.: U.S. General Accounting Office, September 1999), 21.

[36] General Accounting Office, U.S. Industrial Facilities – Workforce Requirements and Related Issues Affecting Depots and Arsenals, Ibid., 10.

[37] Ibid., 11.

[38] General Accounting Office, Depot Maintenance: Status of the Navy's Pearl Harbor Pilot Project, Ibid., 22.

[39] "Defense Working Capital Funds Team Wins Hammer Award," 2 December 1998; available from http://www.defenselink.mil/news/Dec1998/b12021998_bt617-98.html; Internet; accessed 4 November 1999.

[40] General Accounting Office, U.S. Industrial Facilities – Workforce Requirements and Related Issues Affecting Depots and Arsenals, Ibid., 30.

[41] General Accounting Office, Army Depot Maintenance – Privatizing Without Further Downsizing Increases Costly Excess Capacity (Washington D.C.: U.S. General Accounting Office, September 1996), 16-17.

[42] "Chapter 3: Streamlining through Competition", Defense Reform Initiative, linked from http://www.defenselink.mil/pubs/dodreorm/chapter3.html; Internet, accessed 5 January 2000,

[43] Office of the Deputy Under Secretary of Defense (Industrial Affairs and Installations), "The Department of Defense Commercial Activities Program," briefing slides, Washington, D.C.

[44] DoD Report, "Improving the Combat Edge Through Outsourcing," available from http://www.defenselink.mil/speeches/Apr1996/t040596.html, Internet; accessed 24 October 1999.

[45] DoD Report, Ibid.

[46] George Cahlink, "U.S. Army Plan to Privatize Logistics Software Work Could Set Precedent," Defense News, 25 October 1999, 10.

[47] "Army's Apache Helicopter Outsourcing Plan Officially Rejected," linked from Early Bird, available from http://ebird.dtic.mil/Oct1999/e19991007concat.htm; Internet; accessed 7 October 1999.

[48] David Pugliese, "Canada Eyes Savings for Civilian Logistics, Supply Roles'" Defense News, (6 September 1999), 29.

[49] Gregor Ferguson, "New Joint Venture Chases Australian Logistics Gold," Defense News, (25 October 1999), 22.

[50] DoD Report, Ibid.

[51] "General Accounting Office, Army Depot Maintenance: Privatization Without Further Downsizing Increases Costly Excess Capacity, (Washington D.C.: U.S. General Accounting Office, September 1996), 4-5.

[52] General Accounting Office, Defense Depot Maintenance: Challenges Facing DoD in Managing Working Capital Funds, Ibid., 18-19

[53] General Accounting Office, Military Base Closures – Lack of Data Inhibits Cost-Effectiveness Analyses of Privatization-in-Place Initiatives, (Washington D.C.: U.S. General Accounting Office, December 1999) 5.

[54] Deputy Under Secretary of Defense (Installation) Jacques S. Gansler, "Strategic Sourcing Program," draft DoD Interim Guidance, Washington D.C. 5 November 1992.

[55] George Cahlink, "DoD May Avoid A-76 Contests", Defense News (26 July 1998), 4, 60.

[56] George Cahlink, "U.S. Navy Eyes Savings Options With Strategic Sourcing Plan", Defense News (18 October 99), 62.

[57] PricewaterhouseCoopers, "Capacity Analysis of U.S. Army Maintenance Depots and Ordnance Activity Groups (OAG)," 21 June 1999.

BIBLIOGRAPHY

"Agencies Dodge A-76." Government Executive (August 1998): 8.

"Anniston Army Depot." 17 August 98. Available from http://www.ioc.army.mil/rm/iocfact/anad2.htm. Internet. Accessed 1 November 1999.

"Army's Apache Helicopter Outsourcing Plan Officially Rejected." 7 October 1999. Available from http://ebird.dtic.mil/Oct1999/e19991007concat.htm. Internet. Accessed 1 November 1999.

"Congressional Debate Heavy on Industrial Base Concerns." National Defense (September 1997): 57.

"Corpus Christi Army Depot." 17 August 1998. Available from http://www.ioc.army.mil/rm/iocfact/ccad2.htm. Internet. Accessed 1 November 1999.

"Defense Depot Maintenance Council, Business Plan Fiscal Years 1998-2003." Available from http://www.jdmag.wpafb.af.mil/dbp3-3.htm. Internet. Accessed 25 October 1999.

"Defense Working Capital Funds Team Wins Hammer Award." 2 December 1998. Available from http://www.defenselink.mil/news/Dec1998/bl2021998_bt617-98.html. Internet. Accessed 5 October 1999.

"Letterkenny Army Depot (LEAD)." 17 August 1998. Available from http://www.ioc.army.mil/rm/iocfact/lead2.htm. Internet. Accessed 9 December 1999.

"Red River Amy Depot (RRAD)." 18 August 1998. Available from http://www.ioc.army.mil/rm/iocfact/rrad2.htm. Internet. Accessed 9 December 1999.

"Results of Annual Top 10 Survey." Linked from The Outsourcing Institute at "Features." Available from http://www.outsourcing.com/home.htm. Internet. Accessed 21 October 1999.

"Strike at McDonnell Ends as Workers Back Contract." Wall Street Journal, 12 September 1996, sec. A, p.6.

"Tobyhanna Army Depot." Available from http://www.tobyhanna.army.mil/. Internet. Accessed 9 December 1999.

Association of the United States Army, Institute of Land Warfare. "The Procurement Holiday: Path to Failure in Preparedness." ROA National Security Report (October 1999): 29-33.

Association of the United States Army, Institute of Land Warfare. The Army Report: Procurement Holiday. Arlington, VA: Institute of Land Warfare, August 1999.

Bell, Kevin A. "Mergers and Acquisitions in the Defense Industrial Base – Should the U.S. Military Be Concerned?" Air Force Journal of Logistics XXII no.4 (Winter 1998): 22-26.

Bingham, Charles and Bernard Pitsvada. "The Case for Contracting Out and Privatization." Challenge (November/December 1997): 99-116.

Boezer, Gordon, Ivais Gutmanis, and Joseph E. Muckerman II. "The Defense Technology and Industrial Base: Key Component of National Power." Summer 1997. Available from http://carlisle-www.army.mil/usawc/parameters/97summers/gutmanis.htm. Internet. Accessed 5 October 1999.

Brower, J. Michael. "DoD Outsourcing and Privatization." Military Review (September-November 1998): 64-65.

Brower, J. Michael. "Outland: The Vogue of DoD Outsourcing and Privatization." Acquisition Quarterly (Fall 1997): 383-392.

Brower, J. Michael. "Outsourcing at DoD: All it's Cracking People up to be?" Military Review (November/December 1997): 67-68.

Cahlink, George. "Pentagon Lists 500,000 Jobs as Commercial Work." Defense News (18 October 1999): 48.

Cahlink, George. "U.S. Congress: Pentagon Must List Contracted Jobs." Defense News (18 October 1999): 96.

Cahlink, George. "U.S. Navy Eyes Savings Options With Strategic Sourcing Plans." Defense News (18 October 1999) 62.

Coburn, John LTG. " DoD News Briefing." 4 April 1996. Available from http://www.dfenselink.mil/news/Apr1996/t040596/t0404out.html. Internet. Accessed 24 October 1999.

Defense (May/June 1997): 16-17

DoD Report. "Improving the Combat Edge Through Outsourcing." March 1996. Available from http://www.defenselink.mil/speeches/1996/s19960301-report.html Internet. Accessed 24 October 1999.

Ferguson, Gregor. "New Joint Venture Chases Australian Logistics Gold." Defense News (25 October 1999): 22.

Gansler, Jacques S., Deputy Under Secretary of Defense. "Strategic Sourcing Program." Draft DoD Interim Guidance. Washington D.C., 5 November 1999.

Hasenauer, Herke. "One Stop Missile Shop." Soldiers 53 (November 1998): 46-47.

Higgins, Peter J. "When the Industrial Base Goes Cold." Army Logistician (March/April 1999): 42-44.

Kaminski, Paul. "Lean Logistics: Better, Faster, Cheaper." 24 October 1996. Available from http://www.defenselink.mil/speeches/1996/s19961024-kaminski.html. Internet. Accessed 25 October 1999.

Kaminski, Paul. "The Defense Challenge: Technological Supremacy at an Affordable Cost." 27 January 1995. Available from http://www.defenselink.mil/speeches/Jan 1995/b012795_bt039-95.htm. Internet. Accessed 24 October 1999.

Kaminski, Paul. "The Revolution in Defense Logistics." 31 October 1995. Available from http://www.defenselink.mil/speeches/1995/s19951031-kaminski.html. Internet. Accessed 25 October 1999.

Kaminski, Paul. "U.S. Perspective on Defense Industrial Base Trends." 21 June 1996. Available from http://www.defenselink.mil/speeches/1996/s19960621-kaminski.html. Internet. Accessed 24 October 1999.

Liebstone, Martin. "U.S. Defence Industrial Base: Winning or Losing?" Military Technology (November 1997): 6.

McInterney, Thomas G. "Bolstering Military Strength by Downsizing the Pentagon." Issues in Science and Technology (Winter 1997/1998): 78-84.

Meadows, Sandra I. "Push to Privatize Pentagon Work Gathers Wide Support." National Defense (October 1995): 11-13.

Meadows, Sandra L. "Outsourcing of Weapon Maintenance 'Inevitable' Says Defense Depot Chief." National Defense (May/June 1998): 27.

Meth, Martin A. "Addressing Changes in the Defense Industry." Briefing slides with commentary. Office of Director, Industrial Capabilities and Assessments, OSUSD(IA&A).

Office of the Deputy Under Secretary of Defense (Industrial Affairs and Installations). "The Department of Defense Commercial Activities Program." Briefing slides. Washington D.C.

Pasztor, Andy. "McDonnell Douglas Reaches Accord with Machinists." Wall Street Journal, 9 September 1996, sec. C, p.19.

PricewaterhouseCoopers. "Capacity Analysis of U.S. Army Maintenance Depots and Ordnance Activity (OAGs). 21 June 1999.

Pugliese, David. "Canada Eyes Savings for Civilian Logistics, Supply Roles." Defense News (6 September 1999): 29.

Sheftick, Gary and Karen Jolley Drewen. "Aberdeen Reserves Outsourcing Decision." Pentagram 46 no. 38 (24 September 1999): 1-14.

Skibbie, Lawrence F. "Depot Work-Share Debate Must Include Implication for Industrial Base." National Defense (September 1997): 2.

Skibbie, Lawrence F. "President's Perspective." National Defense (May/June 1998): 4.

Thompson, Loren B. "Private-Public Competition – Bad Proposition That Refuses to Die." National Defense (October 1997): 22-23.

Thompson, Neal. "Aberdeen Private Contract Repealed." 16 September 1999. Available from http://ca.dtic.mil/cgi-bin/ebird. Internet. Accessed 16 September 1999.

U.S. Congress, Office of Technology Assessment. Adjusting to a New Security Environment: The Defense Technology and Industrial Base Challenge. Washington D.C.: U.S. Government Printing Office, 1991.

U.S. Congress. House. Committee on Government Reform. Subcommittee on Government Management, Information and Technology. Testimony from Bobby L. Harnage Sr. "Freedom from Government Competition." 24 March 1998. Available from http://www.house.gov/reform/gmit/hearings/h980324/bh980324.htm. Internet. Accessed 29 November 1999.

U.S. Congress. House. Committee on Government Reform. Subcommittee on Government Management, Information and Technology. Testimony from Michael B. Styles. "Freedom from Government Competition." 24 March 1998. Available from http://www.house.gov/refrom/gmit/hearings/h98032224/bh980324.htm. Internet. Accessed 29 November 1999.

U.S. Congress. Senate. Committee on Appropriations. Subcommittee on Defense. Defense Depot Maintenance: Challenges Facing DoD in Managing Working Capital Funds. 7 May 1997.

U.S. General Accounting Office. Army Depot Maintenance: Privatization Without Further Downsizing Increases Costly Excess Capacity. Washington D.C. September 1996.

U.S. General Accounting Office. Defense Depot Maintenance: Contracting Approaches Should Address Workload Characteristics. Washington D.C. 15 June 1998.

U.S. General Accounting Office. Defense Depot Maintenance: DoD Shifting More Workload for New Weapons Systems to the Private Sector. Washington D.C. 31 March 1998.

U.S. General Accounting Office. Defense Depot Maintenance: Information on Public and Private Sector Workload Allocations. Washington D.C. 20 January 1998.

U.S. General Accounting Office. Defense Depot Maintenance: Public and Private Sector Workload Distribution reporting Can Be Further Improved. Washington D.C. U.S. Government Accounting Office. 23 July 1998.

U.S. General Accounting Office. Defense Logistics: Army Should Assess Cost and Benefits of the Workload Performance System Expansion. Washington D.C. 12 November 1999.

U.S. General Accounting Office. Depot Maintenance: Army Report Provides Incomplete Assessment of Depot-type Capabilities, Washington D.C. October 1999.

U.S. General Accounting Office. Depot Maintenance: Status of the Navy's Pearl Harbor Project. Washington D.C. September 1999.

U.S. General Accounting Office. DoD Competitive Sourcing: Plan Needed to Mitigate Risks in Army Logistics Modernization Program. Washington D.C. October 1999.

U.S. General Accounting Office. Military Base Closures – Lack of Data Inhibits Cost-Effectivenss Analyses of Privatization-in-Place Initiatives. Washington D.C. December 1999.

U.S. General Accounting Office. Outsourcing DoD Logistics: Savings Achievable but Defense Science Board's Projections are Overstated. Washington D.C. 8 December 1997.

U.S. General Accounting Office. U.S. Industrial Facilities – Workforce Requirements and Related Issues Affecting Depots and Arsenals. Washington D.C. November 1998.

Wayne, Leslie. "After the Cold War, the Pentagon is Just Another Customer." New York Times (27 February 1998): 1.

Weidenbaum, Marray. "Ensuring Future of Defense Industry." Christian Science Monitor (23 April 1998): 19.

Weidenbaum, Murray. "U.S. Defense Firms Dodged the Budget Bullet." Christian Science Monitor (20 March 1997): 19.

Williams, Robert H. "Warfighters Should Have Pivotal Role in Deciding Work Sharing Decisions." National.